REMARKS

The Examiner is thanked for the due consideration given the application.

Claims 1-5 and 8-17 are pending in the application. The acknowledgement of the allowability of claims 13 and 14 is noted with appreciation. Support for amended claim 1 can be found in paragraphs 0049 and 0050 of corresponding U.S. Publication No. 2006/0227216. Claims 2, 3, 5 and 8 have been amended to improve their language in a non-narrowing fashion. Claims 13 and 14 have been amended to better set forth the invention being claimed, and the amendments to claims 13 and 14 find support in paragraphs 0049 and 0050 of corresponding U.S. Publication No. 2006/0227216.

Claims 15-17 are newly presented. Claims 15 and 17 find support in paragraph 0049 of corresponding U.S. Publication No. 2006/0227216, which discusses that to amplify the energy really received in the red frequency, the energy received on the yellow pixel is more or less amplified after consultation of another pixel: the cyan pixel or, as disclosed, the green one if a green pixel is added in the mosaic. In claims 15 and 17, the magenta is also used for the red frequency but *a priori* without any specific amplification.

Claim 16 generally corresponds to the amendments to claim 1.

No new matter is believed to be added to the application by this amendment.

Rejection Under 35 USC §112, Second Paragraph

Claims 13 and 14 have been rejected under 35 USC §112, second paragraph as being indefinite. This rejection is respectfully traversed.

The Official Action asserts that the phraseology of claims 13 and 14 is unclear.

However, claims 13 and 14 have been amended such that their wording explains that, for displaying the image, each red component of an RGB screen will receive data collected to reconstitute the image of the biological tissue wherein the energy as received by the yellow pixel may be amplified, where the amplification is dependant on the energy received by the neighbouring green pixel.

As a consequence, in practical implementation, IY being the energy intensity received by the yellow pixel, IY' being the amplified energy, IG being the energy received by the green pixel, the coefficient FY(IG) of the amplification of the energy received by the yellow pixel IY is inversely proportional to the energy received by the green pixel.

Thus, in a simplified equation: $IY' = IY.FY(IG) \sim IY.\alpha/IG$. The amplification is thus a local processing on the signals as received by the two neighbouring yellow and green

pixels. It is understood that the amplification of the yellow pixel will be different for each group of four pixels (magenta, yellow, green and cyan) as soon as energy received on at least one neighbouring pixel, here the green pixel, will be locally different. This appears in paragraph 0049 of the corresponding publication. According to the invention, this process is done for each point of the image (see claim 1), pixel by pixel as stated in paragraph 0050 and, consequently, group of pixels by groups of pixels.

In a more general understanding of the invention:

$IY' = IY.FY(IG, ICy, IMg)$.

Even more generally, an amplified energy is calculated for each pixel of different colour as a function of the neighbouring pixels of different colours. Thus:

$IG' = IG.FG(IY, ICy, IMg)$; $ICy' = ICy.FCy(IY, IG, IMg)$; $IMg' = IMg.FMg(IY, ICy, IG)$.

Then, for colour display, the intensity sent to the red component of a pixel of an RGB display is based on the intensities as calculated above in the local group of four pixels of complementary colour that corresponds to this pixel.

Claims 13 and 14 are thus clear, definite and have full antecedent basis.

This rejection is believed to be overcome, and withdrawal thereof is respectfully requested.

Rejections Based on HAYASHI

Claims 1, 2, 4, 5, 9, 11 and 12 have been rejected under 35 USC §102(b) as being anticipated by HAYASHI (U.S. Patent Publication 2001/0049473). Claims 3 and 8 have been rejected under 35 USC §103(a) as being unpatentable over HAYASHI in view of ALFANO (U.S. Patent 5,042,494). Claim 10 has been rejected under 35 USC §103(a) as being unpatentable over HAYASHI in view of PALCIC et al. (U.S. Patent 5,507,287). These rejections are respectfully traversed.

The present invention pertains to a method or device for detecting and locating the difference in density and/or structure and/or chemical composition of a biological tissue (7) that is illustrated, by way of example, in Figure 1 of the application, which is reproduced below.

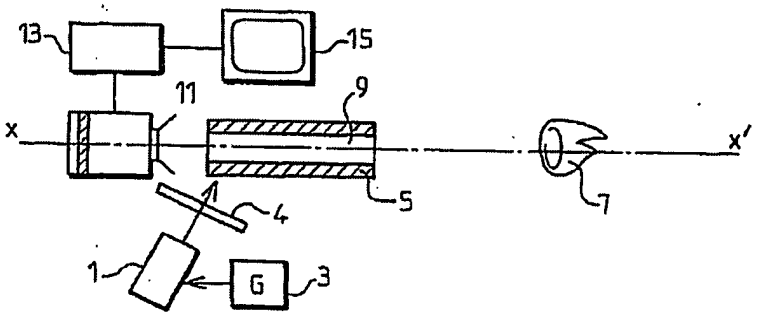


FIG.1

Figure 1 shows a xenon lamp 1 supplied by a current generator 3. The light, which is non-monochrome and supplied by lamp 1, is filtered on leaving the lamp by a filter 4 so as to maintain a radiation band extending from the ultraviolet to the near visible. These light radiations pass through a waveguide

tube 5 and continuously illuminate a biological tissue, in this case a patient's tooth 7.

The utilization of a mosaic of pixels of complementary colours permits the enhancement of the primary colours with a better accuracy because it is possible to act on two signals for enhancing the intensity of a primary fluorescence colour. This advantage is disclosed in the second part of paragraph 0036 of the corresponding patent publication, and is due to the phenomenon that the range of reaction of these filters is greater than those of the primary colours.

Instantly amended claim 1 of the present invention recites: "acting on signals as received by at least two neighbouring pixels provided with filters of different colours, said amplification of the signal corresponding to the energy received in the second band of frequencies being realized from pixel to pixel of the image sensor."

HAYASHI pertains to fluorescence detecting apparatus. Figure 12 of HAYASHI is reproduced below.

FIG.12

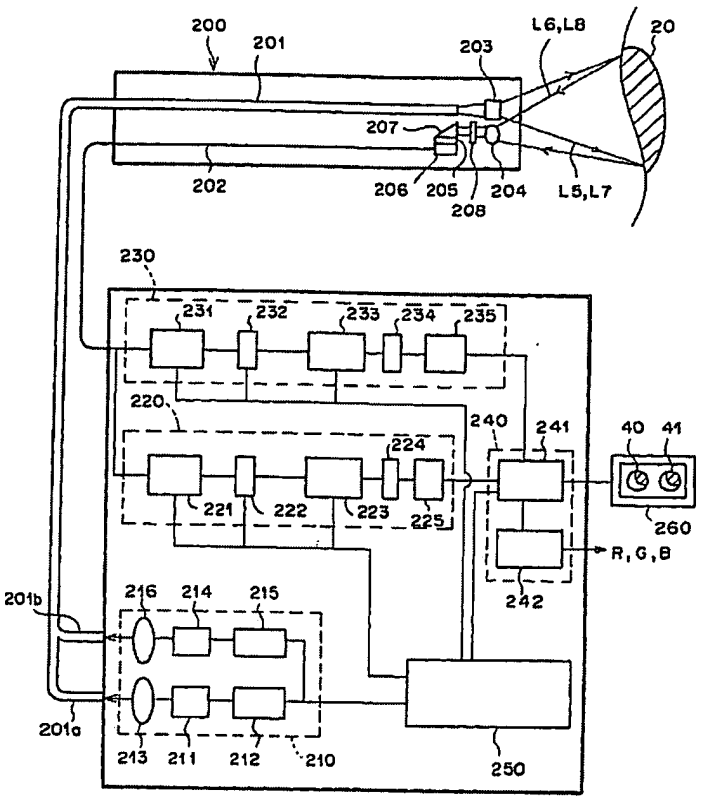


Figure 12 of HAYASHI shows and ordinary image 40 and a fluorescence image 41 as two different entities.

HAYASHI fails to disclose any local amplification using an action on the signals as received by at least two neighbouring pixels provided by filters of different colours based on a pixel by pixel approach.

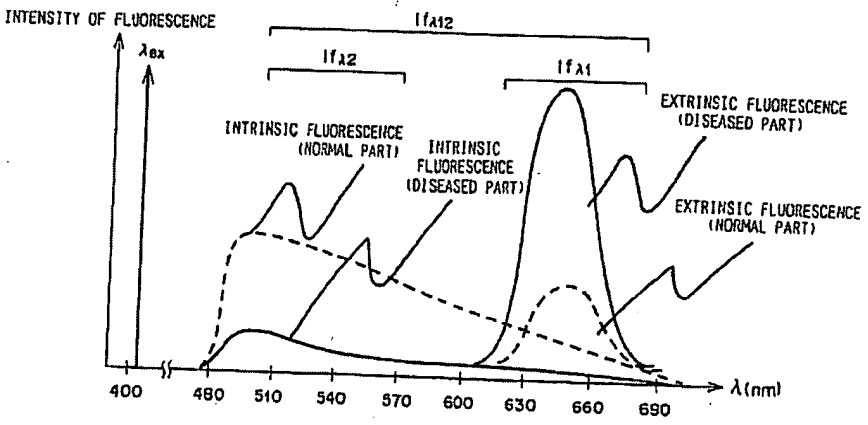
Instead, HAYASHI discloses a method and system for detecting and locating the difference in composition of a biological tissue which is subjected to continuous illumination in a first determined band of frequencies, able to cause the

tissue to generate a phenomenon of fluorescence, auto-fluorescence or luminescence.

HAYASHI thus acquires an ordinary image 40 and a fluorescence image 41 as two different entities.

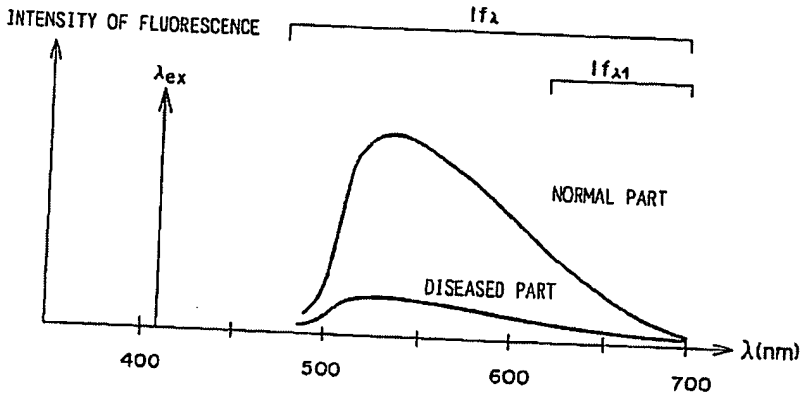
For the acquisition of the fluorescence image 41, HAYASHI uses the difference in behaviour of normal and diseased tissue for extrinsic and intrinsic as disclosed on Figure 2, which is reproduced below.

F I G. 2



In Figure 2 of HAYASHI, one may see that the intrinsic fluorescence is less important on diseased part than on normal part (this is also visible on Figure 11, reproduced below) and that the extrinsic fluorescence is contrarily more important on diseased part that on normal part.

FIG.11



In order to make the fluorescence occurrence evident, HAYASHI proposes to compare the fluorescence as observed in a particular band of frequency in comparison with the total fluorescence that is evaluated beside. A fluorescence image is thus obtained.

Calculation of the fluorescence image is using stored images as acquired by at least three different pixels. HAYASHI never discloses to realize specific amplification on such images. They are compared as a whole.

Consequently, HAYASHI fails to disclose a pixel by pixel process of amplification that would be locally decided, such as is set forth in independent claims 1 and 4 of the present invention.

Further, it is noted that the complementary colours are used only, in a manner known by the person skilled in the art, in order to enhance the sensitivity of the detection of the

fluorescence, not in order to realize a local pixel by pixel amplification.

HAYASHI thus fails to anticipate a claimed embodiment of the present invention.

Also, the applied secondary references of ALFANO and PALCIC et al. fail to address the deficiencies of HAYASHI discussed above. One of ordinary skill and creativity would fail to produce claimed embodiment of the present invention from a knowledge of HAYASHI and the secondary references. A *prima facie* case of unpatentability has thus not been made.

These rejections are believed to be overcome, and withdrawal thereof is respectfully requested.

Conclusion

The Examiner is thanked for considering the Information Disclosure Statement filed January 23, 2006 and for making an initialed PTO-1449 Form of record in the application.

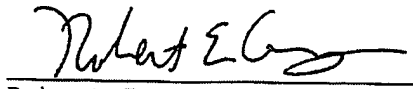
Prior art of record but not utilized is believed to be non-pertinent to the instant claims.

The rejections are believed to have been overcome, obviated or rendered moot, and that no issues remain. The Examiner is accordingly respectfully requested to place the application in condition for allowance and to issue a Notice of Allowability.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

YOUNG & THOMPSON



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